SPECTRUM®

SynOptics 28000 Series Switches Management Module Guide

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Cabletron Systems, Inc.
P.O. Box 5005
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Contents

Preface

What Is in This Guide ix
Conventions x
Related Documentation x
Other Related Documentation xi

Chapter 1 Introduction

What Is in This Chapter 1-1
SynOptics 28000 Series Switches 1-1
SPECTRUM Support 1-2
Accessing SPECTRUM Views from the Device Icon 1-2
Accessing Device-Specific Subviews 1-4

Chapter 2 Device View

What Is in This Chapter 2-1
Logical Device View 2-1
Logical Module Icon 2-3
Icon Subviews for the Logical Module 2-5
Icon Subviews for Ports 2-5
Switch Community View 2-6
Port Statistics 2-8
Network-to-Internal Stats 2-8
Internal-to-Network Stats 2-8
Enable/Disable Port 2-9
Physical Device View 2-10

Chapter 3 Configuration Views

What Is in This Chapter 3-1
Port Configurations Table 3-1
Chassis Configuration View 3-7
Agent Configuration View 3-9

Chapter 4 Event and Alarm Messages

What Is in This Chapter 4-1
Device Events and Alarms 4-1

Chapter 5 Device Topology (DevTop) View

What Is in This Chapter 5-1
Device Topology View 5-1
- Off-Page Reference Panel 5-3
- Simplified Device View Panel 5-3
- Device Icon Panel 5-3
- Port Connections Panel 5-4

Chapter 6 Application View

What Is in This Chapter 6-1
Common Applications 6-1
Application View 6-2
- Application View Modes 6-2

Syn28CommonApp 6-5
- Agent Information 6-5
  - Agent Configuration View 6-5
  - Trap Receiver View 6-5
    - Trap Receiver Table 6-5
  - Add Trap Receiver View 6-6
- Switch Community 6-7
  - Domain 6-7
    - Domain Table 6-7
    - Domain Creation View 6-10
    - Port Domain Table 6-10
    - Standard Table Buttons 6-11
  - Trunk Information View 6-11
    - Trunk Information Table 6-12
  - Switch List View 6-12
    - Switch List Table 6-13
- History Logs 6-13
  - Reset History 6-13
  - Error History 6-14
    - Error Log Table 6-14
  - Trace History 6-15
    - Trace Log Table 6-15

Sy28xEnSwchApp 6-16
- Port Configurations Table 6-16
- Port to MAC View 6-16

Index

Tables

Chapter 1 Introduction

Table 1-1. Supported Models 1-2

Chapter 2 Device View

Table 2-1. Port Status Conditions 2-4
Table 2-2. Module Icon Subviews Menu 2-5
Table 2-3. Port Icon Subviews Menu 2-5

Chapter 3 Configuration Views

Table 3-1. Connector Types 3-2
Table 3-2. Media Types 3-2
Table 3-3. Link Types 3-3
Table 3-4. Port Speeds 3-3
Table 3-5. Connecting Devices 3-4
Table 3-6. Operational Types 3-4
Table 3-7. Next Boot Types 3-5
Table 3-8. Feature Modes 3-8
Table 3-9. Configuration Sources 3-8
Table 3-10. Reboot Agent Values 3-10

Chapter 4 Event and Alarm Messages

Table 4-1. SynOptics 28xxx Switch Events and Alarms 4-2

Chapter 6 Application View

Table 6-1. Receiver Statuses 6-6
Table 6-2. Domain Statuses 6-8
Table 6-3. Reasons for System Reset 6-14
Table 6-4. Reasons for Errors Within Switches 6-15

Figures

Chapter 1 Introduction

Figure 1-1. Using Double-Click Zones to Access SPECTRUM Views 1-3
Figure 1-2. Using the Icon Subviews Menu to Access SPECTRUM Views 1-4

Chapter 2 Device View

Figure 2-1. Logical Device View 2-2
Figure 2-2. Module Icon Detail 2-3
Figure 2-3. Switch Community View 2-7
Figure 2-4. SynOptics 28xxx Switch Device View Physical Module 2-11

Chapter 5 Device Topology (DevTop) View

Figure 5-1. Device Topology View 5-2

Chapter 6 Application View

Figure 6-1. Application View (Icon Mode) 6-3
Figure 6-2. Application View (List Mode) 6-4

Preface

Use this guide if you are going to manage any SynOptics 28000 Series Switch through SPECTRUM. Before using this guide, you should be familiar with SPECTRUM's functions as referenced in the operation and administraton documentation. You should also be familiar with any network management and hardware requirements described in the SynOptics 28000 Series Switch documentation.

What Is in This Guide

The following chapter descriptions outline the organization of the ***SynOptics 28000 Series Switch Management Module Guide***.

Chapter	Description
Chapter 1 *Introduction*	Provides an overview of the SynOptics 28000 Series Switch management module and explains how to access the associated views and tables.
Chapter 2 *Device View*	Describes the Device views representing 28000 series switches modeled in SPECTRUM.
Chapter 3 *Configuration Views*	Describes the Configuration views and network management information available for switch models.
Chapter 4 *Event and Alarm Messages*	Lists and explains the alarm/event messages generated in the Event Log or Alarm Manager for switch models.
Chapter 5 *Device Topology (DevTop) View*	Describes the Device Topology (DevTop) view, which represents a device in terms of its ports and port connections.
Chapter 6 *Application View*	Describes the Application view and the application-specific information available for switch models.

Conventions

This guide uses the following conventions:

- Menu selections and buttons referenced in text appear in **bold**; for example, **Configuration** or **Detail**.
- Button names appear in shadowed boxes when introducing paragraphs describing their use; for example,

Help

- Menu navigation appears in order of selection; for example, **Icon Subviews -> Utilities -> Application**.
- Referenced chapter titles and section headings appear in *italics*.
- Referenced documents appear in ***bold italics***.

Related Documentation

Refer to the following documentation for more information on using SPECTRUM:

SPECTRUM Report Generator User's Guide

SPECTRUM Application View Reference

Getting Started with SPECTRUM for Operators

Getting Started with SPECTRUM for Administrators

How to Manage Your Network with SPECTRUM

SPECTRUM GIB Editor Guide

SPECTRUM AutoDiscovery User's Guide

Portable ManagementApplication for the MMAC-Plus User's Guide

SPECTRUM Portable Management Application Tools Guide

Other Related Documentation

Refer to the following documentation for more information on managing TCP/IP-based networks:

Martin, James, Kathleen Kavanagh Chapman, Joe Leben. ***Local Area Networks: Architectures and Implementations***, 2d ed. Englewood Cliffs, NJ: Prentice Hall, 1994.

Rose, Marshall T. ***The Simple Book: An Introduction to Management of TCP/IP-based Internets***. Englewood Cliffs, NJ: Prentice Hall, 1991.

Stallings, William. ***Data and Computer Communications***, 4th ed. New York: Macmillan Publishing Company, 1994.

Tanenbaum, Andrew S. ***Computer Networks***, 3d ed. Englewood Cliffs, NJ: Prentice Hall, 1996.

Refer to the specific SynOptics hardware manual for a detailed description of your particular SynOptics switch.

Questions about SPECTRUM Documentation

Send your questions, comments or suggestions regarding SPECTRUM documentation to the Technical Communications Department directly via the following internet address:

spectrum-techdocs@ctron.com

Chapter 1

Introduction

What Is in This Chapter

This chapter introduces the SPECTRUM management module for SynOptics 28000 Series Switches. It describes the following:

- SynOptics 28000 Series Switches
- SPECTRUM Support
  - Accessing SPECTRUM Views from the Device Icon
  - Accessing Device-Specific Subviews

SynOptics 28000 Series Switches

The model type name refers to the models used to specify attributes, actions, and associations for the device in SPECTRUM. The model type name for SynOptics 28000 series switches is SwSyn28xxx.

SwSyn281xx
SynOptics 28000 Switches are managed through the Simple Network Management Protocol (SNMP) Advanced Agent. Table 1-1 provides a list of SPECTRUM-supported models and their descriptions. Currently, only 281xx

devices are supported. 282xx devices will be supported in a later revision of SPECTRUM.

Table 1-1. Supported Models

Model	Description
28115	Managed 10BASE-T Work Group Concentrator. 16 STP with AUI Interconnection Port. (Fast Ethernet)
28104	Managed 10BASE-T Work Group Concentrator. 16 STP with FOIRL Interconnection Port. (Fast Ethernet)

SPECTRUM Support

A SPECTRUM management module is a software emulation of a physical device or application. It uses icons to represent these devices/applications in the user interface. The icons provide status “at a glance” through the use of a color code, and access to in-depth information on the device’s configuration and operating activity.

Refer to the and administration documentation for modeling instructions.

Accessing SPECTRUM Views from the Device Icon

The Device icon provides access to SPECTRUM views, which display device-specific information. Access SPECTRUM views using double-click zones (Figure 1-1) and Icon Subviews menus (Figure 1-2).

To access the Icon Subviews menu as shown in Figure 1-2, do the following:

1. Highlight the icon.
2. From the View menu, select **Icon Subviews** or click the applicable mouse button (middle or right). Refer to the operation documentation for information on configuring your mouse.

Figure 1-1. Using Double-Click Zones to Access SPECTRUM Views

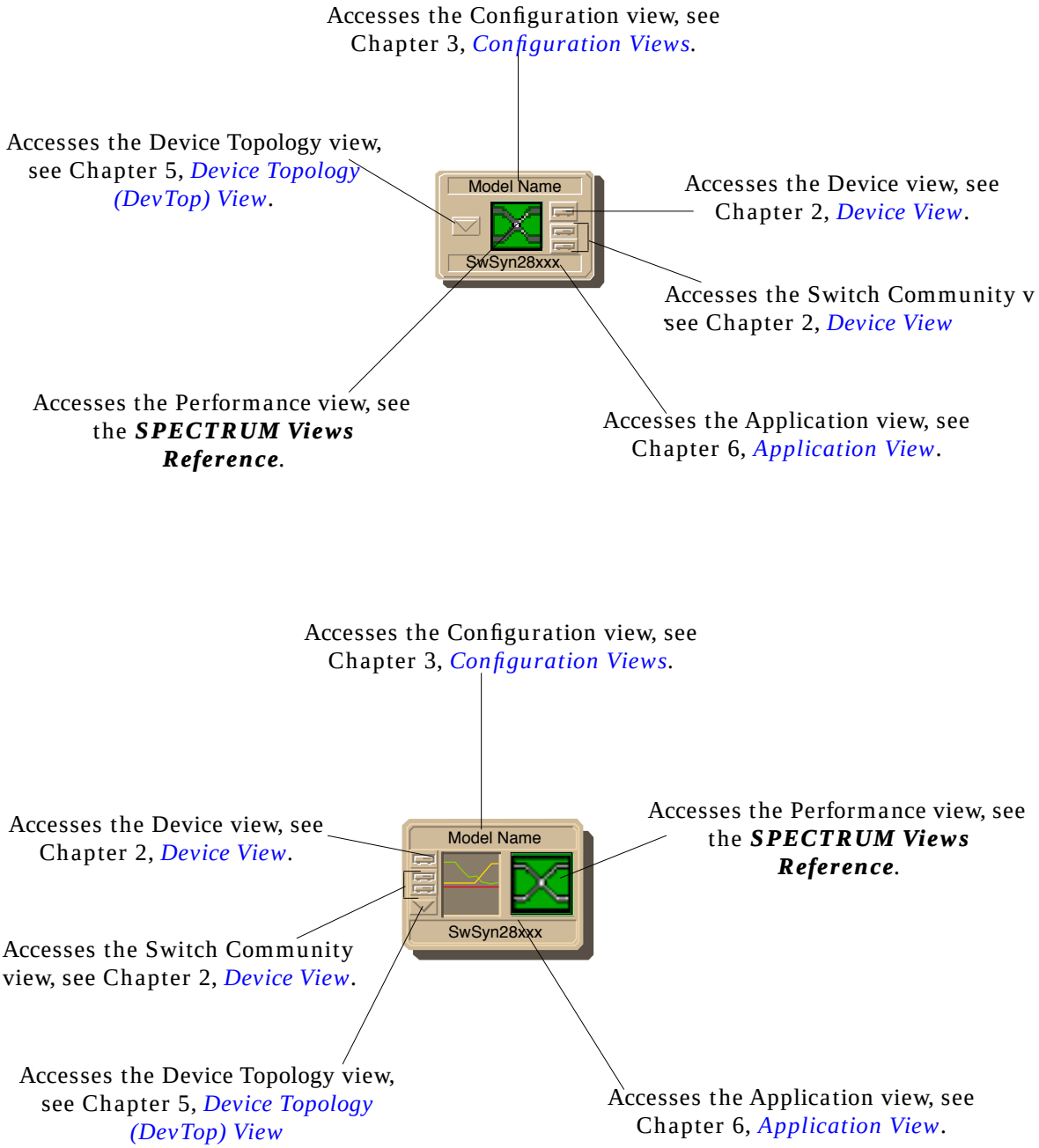
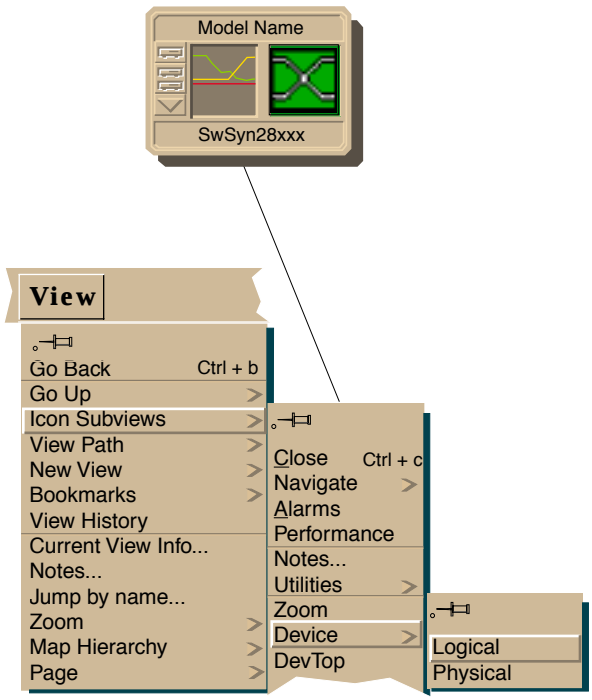

Accesses the Configuration view, see Chapter 3, Configuration Views.
Accesses the Device Topology view, see Chapter 5, Device Topology (DevTop) View.
Model Name
SwSyn28xxx
Accesses the Device view, see Chapter 2, Device View.
Accesses the Switch Community v see Chapter 2, Device View
Accesses the Performance view, see the SPECTRUM Views Reference.
Accesses the Application view, see Chapter 6, Application View.
Accesses the Configuration view, see Chapter 3, Configuration Views.
Accesses the Device view, see Chapter 2, Device View.
Model Name
SwSyn28xxx
Accesses the Performance view, see the SPECTRUM Views Reference.
Accesses the Switch Community view, see Chapter 2, Device View.
Accesses the Device Topology view, see Chapter 5, Device Topology (DevTop) View
Accesses the Application view, see Chapter 6, Application View.

Figure 1-2. Using the Icon Subviews Menu to Access SPECTRUM Views



Accessing Device-Specific Subviews

Icon subviews menus provide access to other views that display device-specific information. The icon-specific Icon Subviews menu selections are described under the applicable section within this guide. The menu selections that are common to all devices are described in the operation and administration documentation. To access the Icon Subviews menu using the View menu, do the following:

1. Highlight the icon.
2. From the View menu, select **Icon Subviews**.

To access the Icon Subviews menu using the mouse button, do the following:

1. Position the mouse pointer on the icon.
2. Click the applicable mouse button (middle or right). Refer to the operation documentation for information on configuring your mouse.

Chapter 2

Device View

What Is in This Chapter

This chapter describes the following Device views available for the SynOptics 28000 series switches.

- Logical Device View
  - Switch Community View
- Physical Device View

SPECTRUM provides both static physical and dynamic logical representations of the switch configuration. With the dynamic logical representation, if the configuration changes, you see the corresponding change within the view after the model's next polling cycle.

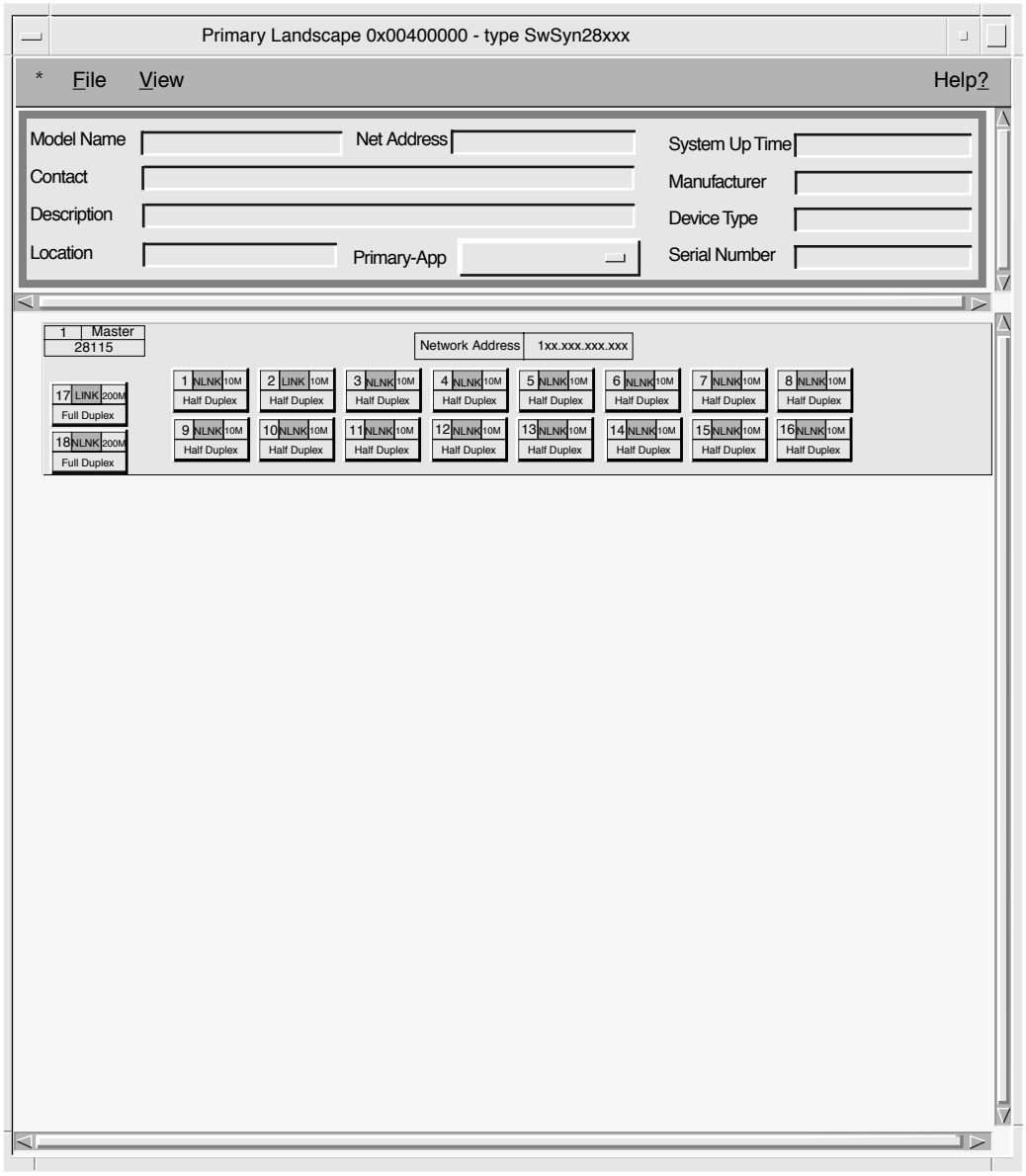
See Chapter 1, *Introduction*, for information on *Accessing SPECTRUM Views from the Device Icon* and *Accessing Device-Specific Subviews*.

Logical Device View

This view displays a logical representation of the switch module that provides information about the switch instead of presenting a physical image.

As Figure 2-1 shows, the Logical Module icon representing the switch contains labels that apply to the switch itself, as well as icons representing its individual ports.

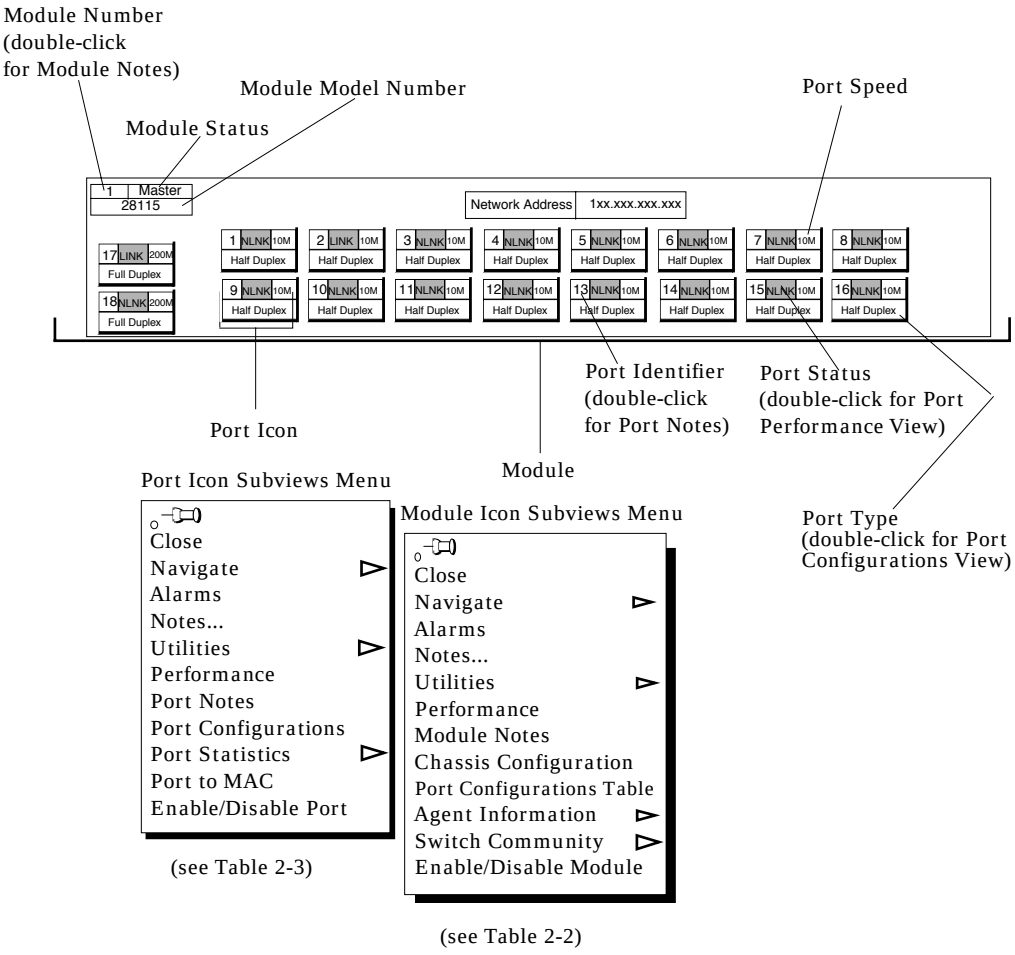
Figure 2-1. Logical Device View



Logical Module Icon

Figure 2-2 shows a detailed illustration of the Logical Module icon and the double-click zones and subviews available from it. The following sections describe each area of the module.

Figure 2-2. Module Icon Detail



The Logical Module icon provides the following module-specific information:

Module Number
Identifies the number of the module in the hub and provides a double-click zone to access Module Notes.

Module Model Number
Identifies which module type this icon represents.

Module Status
Displays the status of the Module: Master or Normal.

The Logical Module icon provides the following information for each of the module's ports:

Port Identifier
Identifies which port this icon represents and provides a double-click zone to access Port Notes.

Port Status
Displays the status of the port and provides a double-click zone that opens the Port Performance View. Table 2-1 describes and lists port status conditions.

Table 2-1. Port Status Conditions

Status	Condition
NLNK (No Link)	Yellow
LINK	Green
PART-Blue	Partitioned ? in Link
PART-Yellow	Partitioned, No Link
PART-Red	Partitioned with a Link
?	Blue

Port Type
Displays the type of port: Duplex or Half Duplex.

Port Speed
Displays the speed of the port: 200M, 100M or 10M.

Icon Subviews for the Logical Module

Table 2-2 describes each of the device-specific Module Icon Subviews menu selections available for this device. See Chapter 1, *Introduction*, for information on *Accessing Device-Specific Subviews*.

Table 2-2. Module Icon Subviews Menu

Menu Selection	Description
Module Notes	Opens the Module Notes view.
Chassis Configuration	Opens the Chassis Configuration view, discussed in Chapter 3, *Configuration Views*.
Port Configurations Table	Opens the Port Configuration Table, discussed in Chapter 3, *Configuration Views*.
Agent Information	Opens the Agent Information view, discussed in Chapter 6, *Application View*
Switch Community	Opens the Switch Community view, discussed in this Chapter.
History Logs	Opens the History Logs view, discussed in Chapter 6, *Application View*.

Icon Subviews for Ports

Table 2-3 describes each of the device-specific Port Icon Subviews menu selections available for this device. See Chapter 1, *Introduction*, for information on *Accessing Device-Specific Subviews*.

Table 2-3. Port Icon Subviews Menu

Menu Selection	Description
Performance	Opens the Port Performance view.
Port Notes	Opens the Port Notes view.
Port Configurations	Opens the Port Configurations view, discussed in Chapter 3, *Configuration Views*.
Port Statistics	This selection contains a submenu from which you may access the Port Network-to-Internal Statistics view or the Port Internal-to-Network Statistics view, both of which are described below.

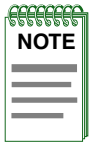
Table 2-3. Port Icon Subviews Menu (Continued)

Menu Selection	Description
Port to MAC	Opens the Port to MAC view, discussed in Chapter 6, *Application View*.
Enable/Disable Port	Opens the Enable/Disable Port view, described below.

Switch Community View

Figure 2-3 shows an example of the Switch Community view. Access the Switch Community view from the double-click zone shown in Figure 2-1. This view displays the connections between domains and ports within a switch community. All the switches connected together are called a "community." At the top of this view is a board that represents the Switch Community with "ports" that represent the domains (or VLANs). Below this are the Logical Module icons representing each of the switches in the community that are modeled in SPECTRUM. The Master is the first switch. If the Master is not modeled, then this view will only show the domains that the switch is in and the Logical Module icon for the switch from which the view was accessed. The view will update if a switch or VLAN is added or removed from the community.

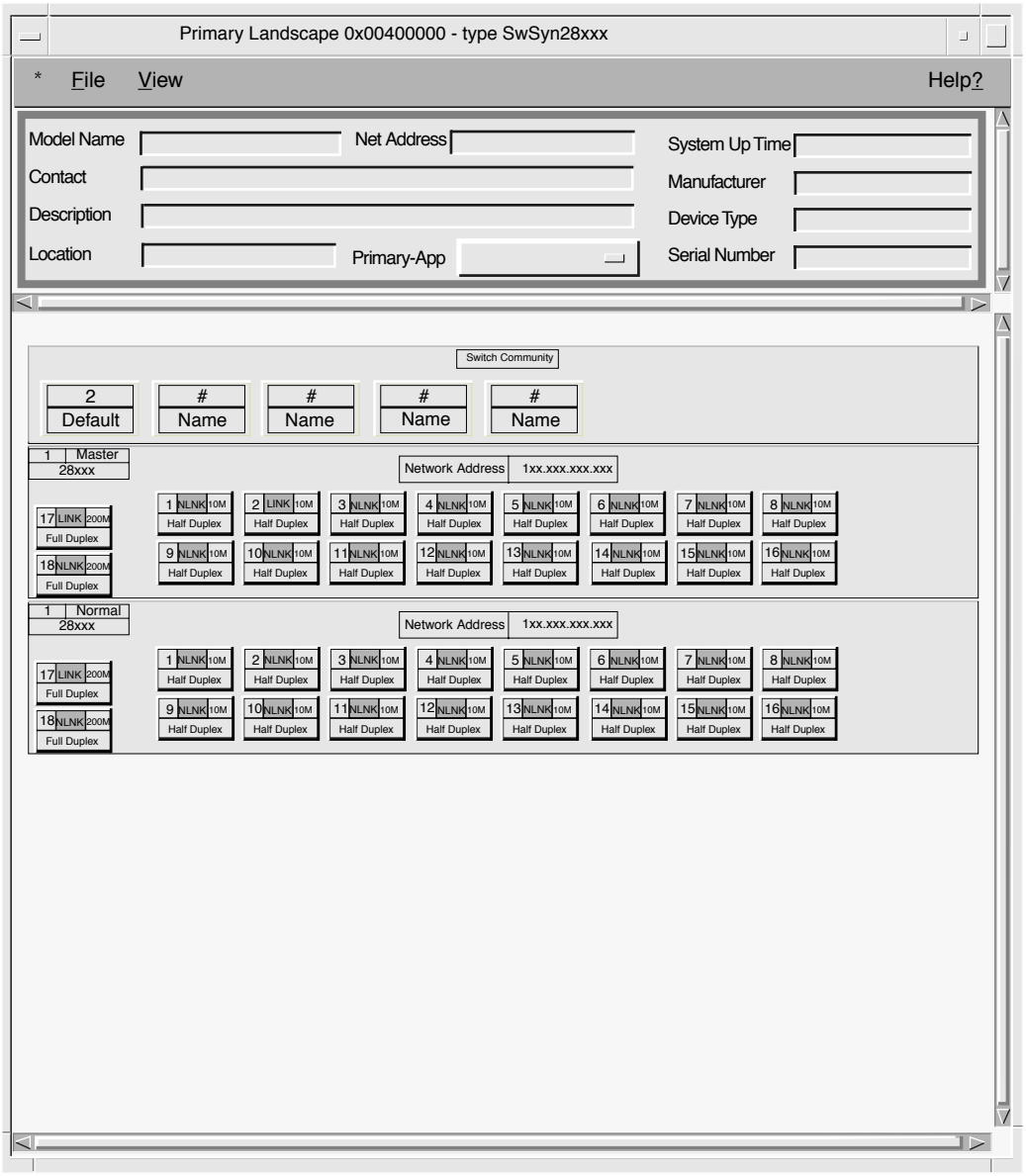
Clicking a port number highlights the domain number of the domain icon containing that port. Clicking the domain number on a domain icon highlights the port number of all the ports in the domain. Clicking the domain number again unhighlights all the ports and the domain icon.



The trunk port is not part of the domain: it connects the switches within the LAN. Trunk port icons look the same as port icons in the Switch Community View, except a trunk port icon has a violet background behind its number.

In addition to the capabilities described above, the port and module icons provide the same information described under *Logical Module Icon*.

Figure 2-3. Switch Community View



Port Statistics

This selection contains a submenu from which the Network-to-Internal Stats and Internal-to-Network Stats views may be accessed.

Network-to-Internal Stats

Opens the SynOptics 28xxx Port Network-to-Internal Statistics View. This view contains the following information:

Network Received
This panel contains the following fields:

Good Frames
Displays the number (32 bit) of good frames received from the network.

Align Errors
Displays the number (32 bit) of received frames with an alignment error from the network.

Crc Errors
Displays the number (32 bit) of received frames with a CRC error from the network.

Overruns
Displays the number (32 bit) of times that a receiver overrun condition was detected when receiving frames from the network.

Internal Transmit
This panel contains the following fields:

Frames
Displays the number (32 bit) of transmitted frames to the internal channel.

Buffer Overflows
Displays the number (32 bit) of buffer overflows occurring while transmitting a frame to the internal channel.

Internal-to-Network Stats

Opens the SynOptics 28xxx Port Internal-to-Network Statistics View. This view contains the following information:

Internal Received
This panel contains the following fields:

Frames
Displays the number (32 bit) of transmitted frames from the internal channel out the port.

Buffer Overflows
Displays the number (32 bit) of buffer overflows occurring while transmitting a frame from the internal channel out the port.

Network Transmit
This panel contains the following field:

Congestion
Displays the number (32 bit) of times that a congestion was detected when transmitting to the network. The meaning of "congestion" varies between the two types of ports.

Enable/Disable Port

This panel lets you enable or disable a particular port. The port state is displayed along with the following fields and buttons:

Module
Displays the number specifying the hub location of the module containing the port.

Port
Displays the number uniquely identifying the selected port on the module.

Port State
This menu button allows you to **Enable** or **Disable** the port.

Apply
Applies the current settings.

Read
Reads and updates the information from the device.

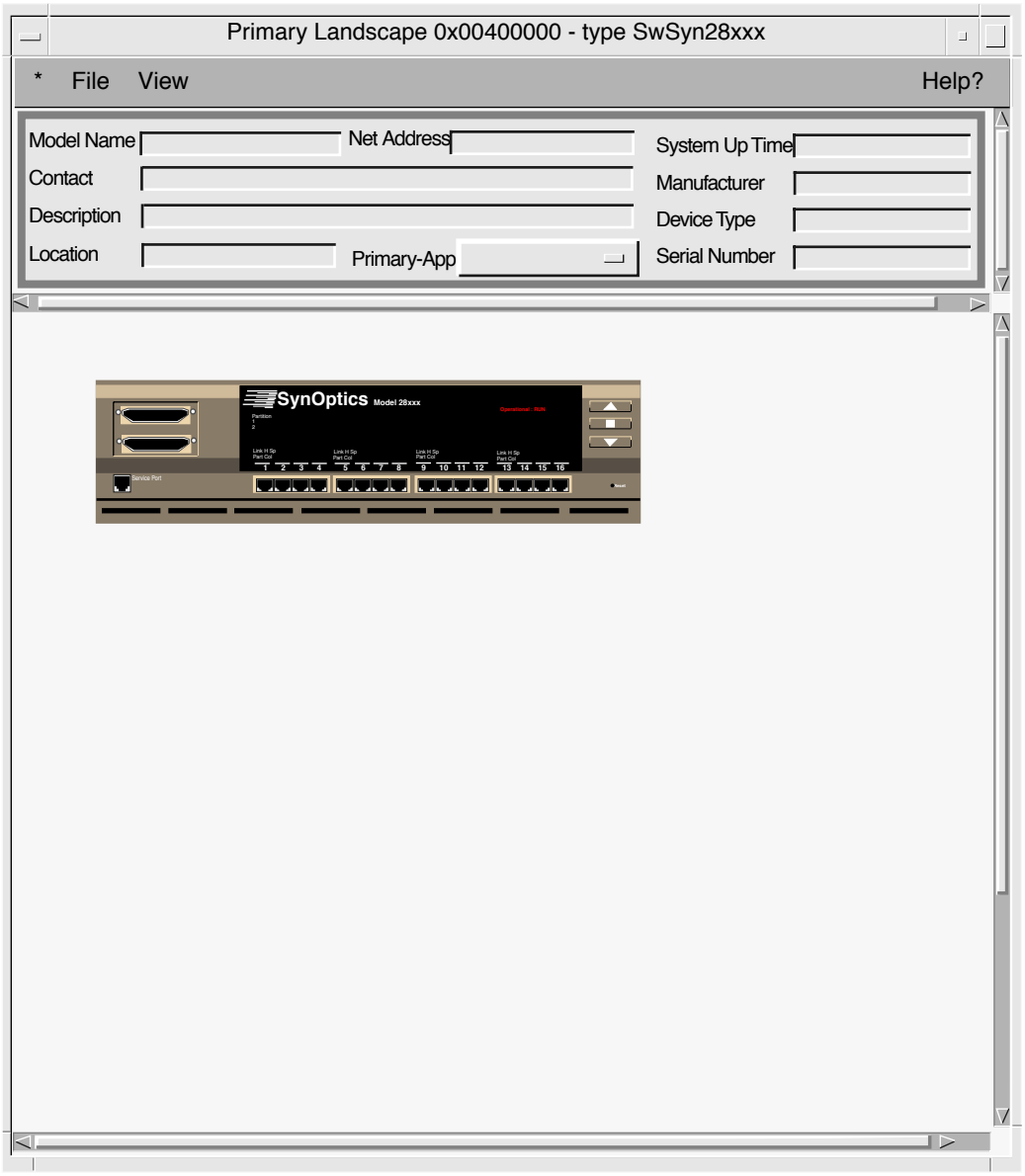
Cancel
Use this button to exit the view. Unapplied settings will revert to last applied settings.

Physical Device View

This view (Figure 2-4) shows a static physical representation of the switch, including each of its modules and ports.

The Physical Device view allows you to access the same Icon Subviews menu that is available from the module icon in the Logical Device view. To access the Icon Subviews, select **Icon Subviews** from the View menu. Port views cannot be accessed from this view.

Figure 2-4. SynOptics 28xxx Switch Device View Physical Module



Chapter 3

Configuration Views

What Is in This Chapter

This chapter describes the Configuration views available for SynOptics 28000 series switches. These views display network configuration and operating information for the device and its interfaces.

The following Configuration views are available for this device:

- Port Configurations Table
- Chassis Configuration
- Agent Configuration

See Chapter 1, *Introduction*, for information on *Accessing SPECTRUM Views from the Device Icon* and *Accessing Device-Specific Subviews*.

Port Configurations Table

The Port Configurations Table specifies the configuration of each port for a switch. Access this table through the Icon Subviews menu for the Logical Module icon. This table contains the following fields and button:

Slot
Displays the slot number on the switch identifying the port.

Port
Displays the port number on the switch.

Domain Id
The unique ID of the domain.

Partition Status
Displays the partition status of the port. Possible values are “enabled” (enables the port), “partition” (partitions the port), “other” (partition status unknown). The value “partition” will survive resets of the host card, causing the port to be partitioned indefinitely until the value “enabled” is written. Partitioning a trunk port is not allowed.

Link Status
Displays the link status of the port. The values are “other” (other or not known) “off” (link is not connected) “on” (link is connected). Ports will have a value of “off” or “on.” All other port types will have a value of “other.”

Connector
Displays the type of connector that the port offers. Table 3-1 lists and describes the possible types.

Table 3-1. Connector Types

Type	Description
other	other or not known
rj45	RJ45 connector
fiber	Fiber connector
expansionPort	Expansion Port connector

Media Type
Displays the media type for the port. Table 3-2 lists and describes the possible types.

Table 3-2. Media Types

Type	Description
other	other or not known
m10BaseT	10BaseT Ethernet
m100M	100M Ethernet
m10or100M	10BaseT and 100M switchable
m200e	200M expansion port

Link Type
Displays the type of link for the port. Table 3-3 lists and describes the possible types.

Table 3-3. Link Types

Type	Description
otherIntCon	The port is connected to an interconnection device which is NOT a SynOptics interconnect device.
synIntCon	The port is connected to a SynOptics interconnection device.
feeder	The port is being used for host connectivity.
trunk	The port is being used for interconnecting LAN Switches in a community.

Speed
Displays the speed for a port. Table 3-4 lists the possible speeds.

Table 3-4. Port Speeds

Value	Speed
s10	10Mbits per second
s100	100Mbits per second
s200	200Mbits per second

The port media type (expansion or regular) and port link type (trunk or feeder) determine the valid values, and whether you can change the speed: you cannot change the speed for trunk ports.

The speed for expansion ports can be set to “s100” or “s200”. However, the value of this parameter may be automatically set whenever the expansion port is connected to another switch.

Port Configurations

Highlight a row in the Port Configurations Table and click this button to access the SynOptics 28xxx Port Configurations View. This view is also accessible from the Icon Subviews menu for the Port icon. This view contains the following information:

Slot
Displays the slot number on the switch identifying the port.

Port
Displays the port number on the switch.

Domain ID
Displays the unique ID of the domain.

Remote Fault
Displays the remote fault sensing of fiber ports. Possible vaules are “other” (other or not known), “fault” (remote device signalled a fault condition) or “nofault” (remote device signalled a no fault condition).

Only fiber ports will have a value of “fault” or “nofault.” All other port types will have a value of “other.”

Connecting Device
Identifies the type of device to which the port is connected. Table 3-5 lists and describes the possible devices.

Table 3-5. Connecting Devices

Device	Description
other	other or not known
model514	Model 514 fiber transceiver
model515	Model 515 UTP transceiver
cascade	Model 28K LattisSwitch Ethernet Switch

For expansion ports, “other” means that there is no device connected. For all other ports, the value “other” is returned for device types other than those listed above.

Operational Type
Indicates the operational switch port type. The operational port type is the outcome of LattisSpan protocol and is determined by the system. Table 3-6 lists and describes the possible types.

Table 3-6. Operational Types

Value	Description
other	other or not known
skip	Skip this enumeration intentionally for providing compatibility between different version of LattisSpan.
actfeeder.active feeder	The port is being used for host connectivity.
trunk	The port is being used for interconnecting LAN Switches in a community.
stbfeeder.standby feeder	The port is being used as standby port for host connectivity.

Flow Control
Displays the flow control status of the port. It is in effect only when the port is operating at 100 mbs in full-duplex mode. Possible values are “enabled” (enable flow control of the port), “disabled” (disable flow control of the port), “other” (status unknown).

Port Type Configuration
Indicates the current switch port type configuration. Possible values are “other” (other or not known), “auto” (the port is configured for interconnecting LAN Switches in a community), or “feeder” (the port is configured for host connectivity).

Next Boot Type
Indicates the switch port type that will be in effect after the next boot of the switch. Table 3-7 lists and describes the possible types.

Table 3-7. Next Boot Types

Value	Description
other	other or not known
auto	The port is configured for interconnecting switches in a community.
feeder	**The port is configured for host connectivity.**

Partition Status
Displays the partition status of the port. Possible values are “enabled” (enable the port), “partition” (partition the port), or “other” (partition status unknown). The value “partition” will survive resets of the host card, causing the port to be partitioned indefinitely until the value enabled is written. Partitioning a trunk port is not allowed.

Link Status
Displays the link status of the port. Possible values are “other” (other or not known), “off” (link is not connected) or “on” (link is connected).

Ports will have a value of “off” or “on.” All other port types will have a value of “other.”

Connector Type
Displays the type of connector that the port offers. See Table 3-1 for a list and description of Connector Types.

Duplex Mode
Displays the port can be set to operate in either half or full duplex mode. The values are “halfDuplex” or “fullDuplex.”

The port media type (expansion or regular) and port link type (trunk or feeder) determine your ability to choose between half or full duplex mode. The port cannot set to half duplex mode if the port speed is set to “s200.” However,

the value of this parameter may be automatically set whenever the expansion port is connected to another switch.

Media Type
Displays the media type for the port. See Table 3-2 for a list and description of Media Types.

Port Speed
Displays the speed of the port. See Table 3-4 for a list of the possible speeds.

The port media type (expansion or regular) and port link type (trunk or feeder) determine the valid values, and whether you can change the speed. You cannot change the speed for trunk ports.

For expansion ports, the “s100” and “s200” can be set. However, the value of this parameter may be automatically set whenever the expansion port is connected to another switch.

Link Type
Displays the type of link for the port. See Table 3-3 for a list and descriptions of the possible types.

Configuration Changes
Displays the total number of port configuration changes to this switch including port partition/unpartition, port speed change, port reset and port half/full duplex change, since warm/cold restart.

Last Change
Displays the value of sysUpTime when the last port configuration change to the switch was detected. If none have been detected of the domain since warm/cold restart, then the value is zero.

Port Reset
Action object to reset a port. Possible values are “reset” and “resetOK.”

Chassis Configuration View

This view contains the following information:

Chassis Switch ID
Displays the unique identifier for the switch.

Chassis Type
Diplays the chassis type, as defined under lsChasTypeVal in the Registration MIB.

Chassis Description
Provides a description of the chassis.

Chassis Location
Indicates the physical location of the chassis (e.g., “fourth floor wiring closet in building A”).

Chassis Contact
Identifies the contact person for the chassis, together with information on how to contact this person.

Chassis Version
Displays the major revision designation of the chassis, if available.

Chassis Serial Number
Displays the serial number of the chassis, if available.

Total Configuration Changes
Indicates the total number of configuration changes (other than physical additions or removals) across all boards in the chassis that have been detected since cold/warm start of the agent.

Last Configuration Changes
Displays the time when the last configuration change (other than physical additions or removals) on any board in the chassis was detected. If none have been detected since cold/warm start of the agent, then the value is zero.

System Date
Displays the system date in mm/dd/yy format.

System Time
Displays the system time in hh:mm:ss format.

Number of Fans
Indicates the total number of fans in the chassis.

Feature Mode
Displays the type of switch. Table 3-8 lists and describes the possible modes.

Table 3-8. Feature Modes

Type	Description
other	other or not known
original	Legacy 28115 or 28104 type of original
standard	standard 28115
advanced	advanced switches (28115/A20 or 28104/A20)
upgradeadvanced	upgrade advanced 28115/Advan

Topology Mode
Identifies the method used for detection of redundant links to switches. Possible values are “other” (other or not known), “lattisspan” (SynOptics way), and “a8021d” (8021: IDMode).

Board Information

This button opens the Board Information view, which provides the following information for each board inserted in the chassis. Initially, this table will describe the single board used by the switch for all functionality including SNMP management.

Board
Displays the board number.

Status Display
Indicates the current ASCII character display of the board, for boards with display hardware. Values are concatenated for boards with multiple displays.

Date Code
Displays the date of manufacture of the board, if available, in format: YYYYmmdd.

Config Source
Indicates the source of the configuration at the last board reset. Table 3-9 lists and describes the possible sources.

Table 3-9. Configuration Sources

Source	Description
other	unknown or some other value
nms	from the network management station

Table 3-9. Configuration Sources

Source	Description
nvram	from non-volatile memory within the board
master	from the master agent

Config Changes
Displays the total number of configuration changes for the board that have been detected since cold/warm start of the agent or since the board was inserted.

Config Time
Indicates the time when the last configuration change on the board was detected.

Baseboard
Distinguishes the baseboard type from the chassis type.

Agent Configuration View

This view contains the following information:

RAM Version
Displays the version of the agent in the form "major.minor.maintenance[letters]."

Local Storage Version
Displays the version of the agent image saved in local storage such as flash memory in the form "major.minor.maintenance[letters]." If not known or not available, then the value is a zero length string.

Initial Boot Info Source
Allows you to choose the initial boot information source. Possible values are "other," "local," and "net" using bootp."

Current Gateway
Displays which gateway is currently in use.

Next Boot Gateway
Displays the IP address of the default gateway (router) for the agent to use after the next boot.

Schedule Boot
Displays the time at which the device is scheduled to reboot. Reboot can be scheduled up to seven (7) days in advance.

Cancel Schedule Boot
Allows cancelation of scheduled boot. Selections are "cancel" and "other."

Next Boot Image Load Source
Displays where to get the firmware image for the next time it boots. Possible values are “local” (stored on the device), “net” (going out to another computer and getting the image), or “other.”

Image Boot Next
Allows you to select a firmware image type you have downloaded and stored. Possible selections are “other,” “image1,” “image2,” or “latest.”

Boot Image 1
Displays which flashbank is set to load an image when rebooting, or which image to store when downloading.

Boot Image 2
See Boot Image 1.

Next Boot IP Address
Displays the IP address of the interface for the next boot.

Load Server Address
Displays the IP address of the load server for the configuration file and/or the image file.

Config File Name
Displays name of the configuration file associated with the interface.

Image File Name
Displays the name of the firmware image file(s) associated with the interface. Some agents in special situations may support a value which contains multiple file names instead of a single file name. Multiple names are specified as a list of file names separated by semicolons.

Next Boot Net Mask
Displays the subnet mask for the interface for the next boot.

Download
Allows you to download a new image to the agent. Possible values are “other” (agent in unknown state), “running” (agent running after download), and “download” (re-download a new image).

Reboot Agent
Allows you to reboot the agent.

Table 3-10 lists the possible values.

Table 3-10. Reboot Agent Values

Value	Description
other	agent in unknown or other state
running	agent running

Table 3-10. Reboot Agent Values

Value	Description
reset	soft reset
hard reset	hard reset

Chapter 4

Event and Alarm Messages

What Is in This Chapter

This chapter describes the types of events and alarms generated by the SynOptics 28000 Series Switches Management Module and any probable cause messages corresponding to these alarms.

Device Events and Alarms

Table 4-1 lists the SPECTRUM database directory and file names (in bold) and the messages displayed for the Event Log and Alarm Manager when applicable for SynOptics 28000 switches.

Table 4-1. SynOptics 28xxx Switch Events and Alarms

Message in the Event Log	Alarm View Probable Cause Message
CsEvFormat/Event01770001 {d "%w- %d %m-, %Y - %T"} Fan {T Syn28xFan 1} has failed on the switch. - (event [{e}])	**CsPCause/Prob01770001** One or more fans on the switch have died.
CsEvFormat/Event01770002 {d "%w- %d %m-, %Y - %T"} A new Master Switch is elected, named {m } - (event [{e}])	**CsPCause/Prob01770002** 1) The priority of a switch has changed (the lowest priority is the master). 2) A new switch has been added to the switch community. 3) The master switch has been taken out of the switch community or died.
CsEvFormat/Event01770003 {d "%w- %d %m-, %Y - %T"} A Switch topology change is detected. - (event [{e}])	**CsPCause/Prob01770003** 1) Broken trunk. 2) Newly established trunk.
CsEvFormat/Event01770004 {d "%w- %d %m-, %Y - %T"} An exceptional event has taken place. {T1 } - (event [{e}])	**CsPCause/Prob01770004** 1) Undetermined.

Chapter 5

Device Topology (DevTop) View

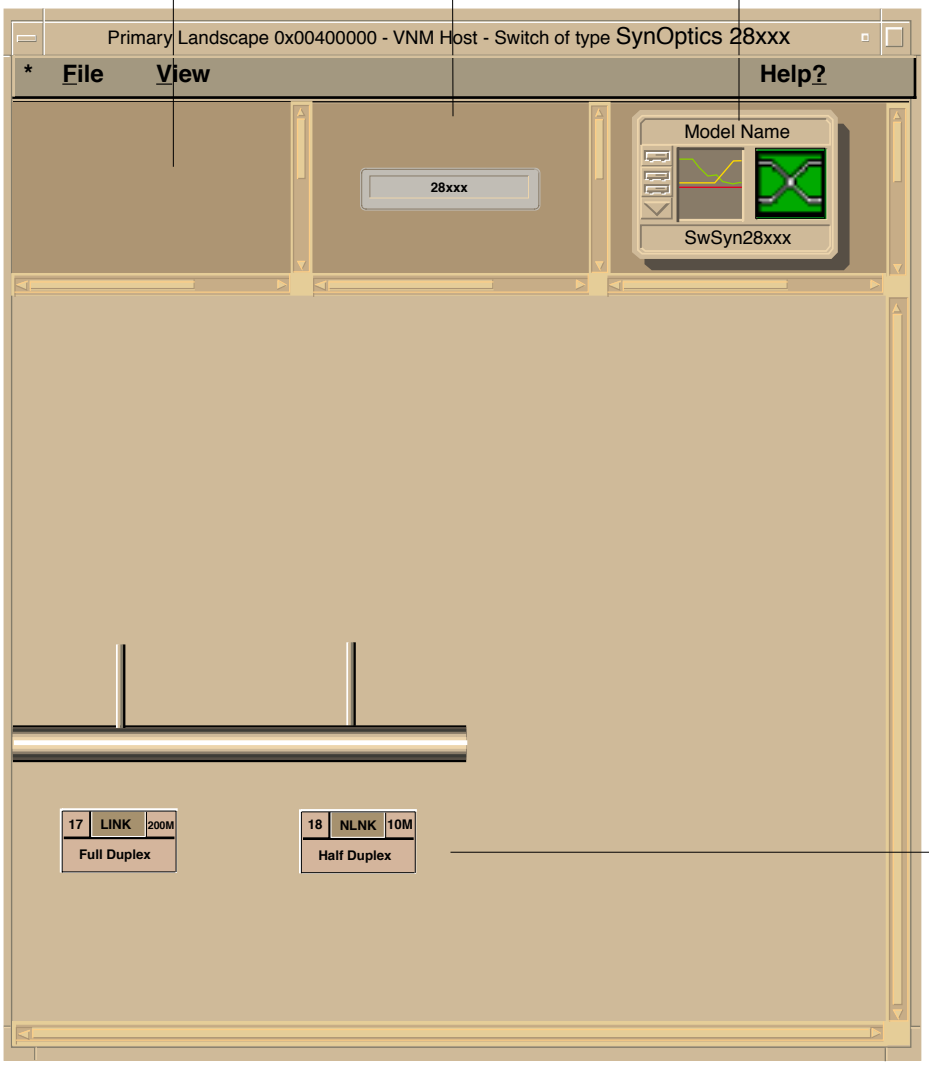
What Is in This Chapter

This chapter describes the Device Topology view for SPECTRUM models of SynOptics 28000 switches. This chapter also describes the views and functions available from the Device Topology view. The Device Topology (DevTop) view represents a device in terms of its ports and port connections.

Device Topology View

The Device Topology view allows you to connect other devices to SynOptics switch ports. It also allows you to view information pertaining to these ports and their connections. Figure 5-1 provides an example of the DevTop view for the SynOptics switch model.

Figure 5-1. Device Topology View



Off-Page Reference Panel: Displays a device connected to the switch in this view.

Simplified Device View Panel

Device Icon Panel: Displays the Location View Icon for the switch. Use this icon to select Device and GIB Views.

Port Connections Panel: Displays icons representing the ports. Status, activity and information for each port is provided.

Off-Page Reference Panel

The Off-Page Reference panel in the top-left section of the DevTop view displays icons representing network devices that SPECTRUM "knows" are connected to the SynOptics switch, but for which a specific port connection has not been determined. These triangular-shaped icons must be connected to a port for SPECTRUM to correctly monitor and manage the connected device.

To connect an Off-Page Reference icon to a port, follow these steps:

1. Select **Edit** from the File menu.
2. Click on the Off-Page Reference icon.
3. Drag the Off-Page Reference icon onto a port in the Port Connections panel at the bottom of the DevTop view (the triangular-shaped device icon turns into a small rectangular icon).
4. Select **Save & Close** from the File menu.

As soon as this port connection process is completed, you can manage and monitor information from devices connected to the SynOptics Switch device. Refer to the operation and administration documentation for more information.

Simplified Device View Panel

The Simplified Device View panel, in the top center of the DevTop view, contains a picture of the SynOptics switch.

Device Icon Panel

The Device Icon Panel displays the Location View Device Icon for the switch, and provides double-click access to additional views as shown in Figure 5-1

Port Connections Panel

The Port Connections panel, located at the bottom of the DevTop view, represents the ports contained in the SynOptics switch device. You can move any device model icons that appear in the Off-Page Reference panel to the Port Connections panel and connect them to an appropriate port. You can also create new device model icons with the **New Model** option from the Edit menu, and subsequently connect them to the proper port.

The device-to-port connection process is controlled by the Connects_to relation rule. SPECTRUM checks these relation rules to verify that the connection can be made. Once you make a connection between a device and the port, an association forms between the port and the connected device via the Connects_to relation. SPECTRUM also forms a Collects relation between the newly connected device model, its connected port, and the SynOptics switch device.

The Port icons provide performance and status information for each port on the device. The views available from the Port icons are the same views available from the Port icons described in Chapter 2, *Device View*.

Chapter 6

Application View

What Is in This Chapter

This chapter provides a general description of the Application view for SynOptics 28000 series switch modules, lists the common applications supported by these switches, and describes the following device-specific applications:

- Syn28CommonApp
- Syn28xEnSwchApp

Common Applications

This device supports the following common applications, which are described in the ***SPECTRUM Application View Reference***:

- MIB-II (SNMP2_Agent)
  - IP (IP2_App)
  - System (System2_App)
  - UDP (UDP2_App)

Application View

The Application view allows you to access increasingly detailed views of network information for the applications supported by this device. You can view information on any application supported by the SynOptics Switch. Each application appears as an icon in the Application view. Access application-specific Model Information views, Performance views, and Detail views from these icons. Depending on the specific application, various additional views are also available and are discussed in this section.

Two special options are available for the Application view through the Edit menu. These menu-choice options interact with the device modeled and are as follows:

Poll Time

Opens a dialog box that allows entry of the time interval, in seconds, when the SpectroSERVER reads all the attributes of the device that are marked as POLLED.

Reconfigure

Polls the device to discover the applications supported by the firmware and reconfigures the Application view accordingly. Use this option to recover destroyed application icons.

Application View Modes

Depending on the display mode you choose, the Application view either lists the supported common and device-specific applications by name or shows them as icons.

Figure 6-1 shows an example of an Application view in the Icon mode. Figure 6-2 shows an example of an Application view in the List mode.

To change the display mode, from the View menu select **Mode -> List** or **Icon**.

See Chapter 1, *Introduction*, for information on *Accessing SPECTRUM Views from the Device Icon*.

Figure 6-1. Application View (Icon Mode)

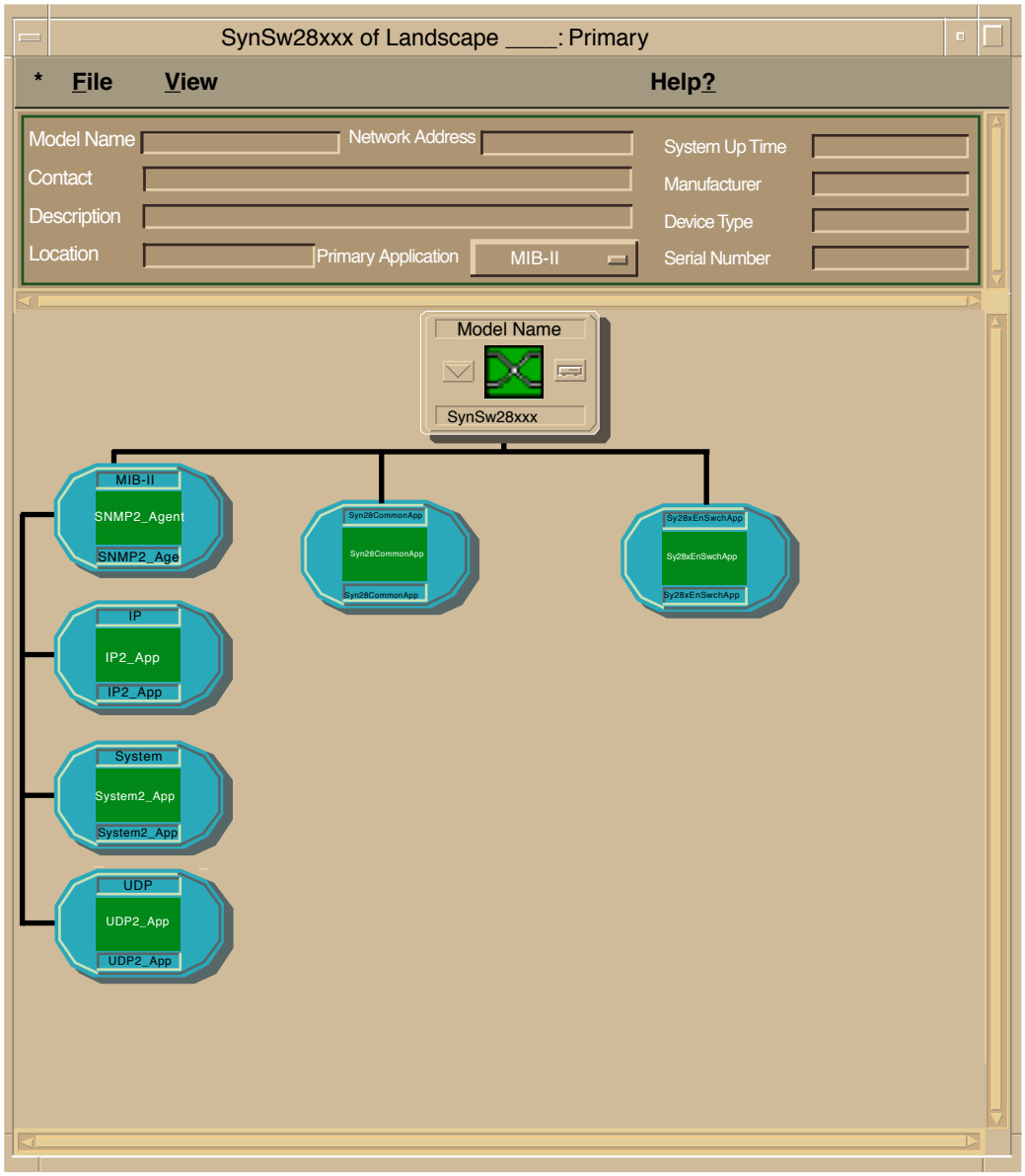
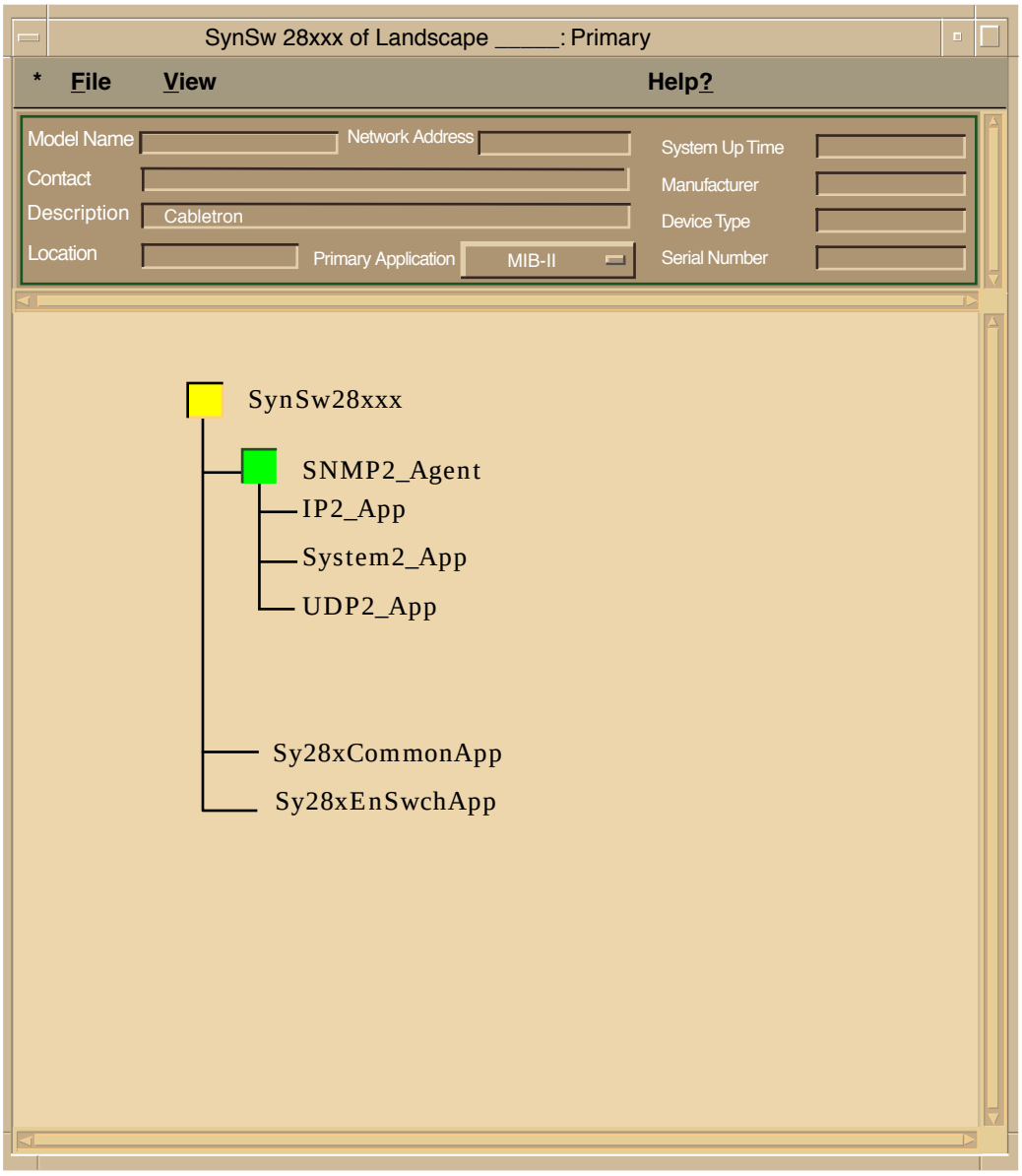


Figure 6-2. Application View (List Mode)



Syn28CommonApp

The following submenus, subviews and tables are available through the Syn28CommonApp's Icon Subviews menu.

Agent Information

This selection accesses the Agent Configuration and Trap Receiver views, which are described below.

Agent Configuration View

See Chapter 3, *Configuration Views* for a description of this view.

Trap Receiver View

This view presents trap receiver information in tabular form and allows you to determine which addresses will receive traps generated by the switch.

Maximum Entries
Indicates the maximum number of rows in the trap receiver table.

Current Entries
Displays the current number of rows in the trap receiver table.

Next Available Entry
Displays the index of the next available row to be created in the trap receiver table. A value of zero means that the table is full and no more rows can be added.

Trap Receiver Table

Provides a table of trap-receiving managers.

Receiver
Indicates a row in the trap receiver table.

Receiver Status
Used to create and delete rows in the table.

Table 6-1 lists and describes the possible statuses.

Table 6-1. Receiver Statuses

Status	Description
ignore	do not use this entry to send traps to at this time
delete	deletes the row
create	creates a new row
other	some other case
valid	the row exists and is valid

Address Type
Displays the type of address that is stored. The value is “ip” (IP address).

Network Address
Displays the network address (in network order) for SNMP manager that is to receive the trap.

Community String
Indicates the community string to use.

Age Time
Displays the time interval used to age entries out of the trap receiver table. The default value if not specified will be 0, or infinite, never to be aged out. The default value is zero (0).

Add Receiver

This button opens the Add Trap Receiver View, described below.

Add Trap Receiver View

This view contains the following information:

Next Entry Index
Displays the value of the next index in the table.

Use Entry Index
Displays the entry currently in use.

Network Address
Displays the address of the station to which you want traps to be sent.

Address Type
Displays the address type.

Community Name
Displays the community name.

Status
Displays the status of the trap received.

Age Time
Displays the time the trap was received.

Switch Community

This selection contains a submenu: Domain, Trunk Information, Switch List, and History Logs. These views provide the following information.

Domain

This view contains the following fields and the Domain Table:

Switch Type
Displays type of switch: Master or Normal.

Operating Mode
Allows choice of operating mode. Possible selections are “basic” (default Operation Mode (no user domains)), “virtual” (port has been configured in a user domain), or “other.”

Number of Domains
Displays the number of domains in the network.

Number of Ports in Domains
Displays the number of ports in all the domains.

Domain Table

The Domain Table identifies the domains in the switch community. Only those domains that are related to the switch can be seen when communicating to a non-master switch. Only the master switch has the entire domain information for a switch community.

This table contains the following fields and buttons:

Domain Id
Displays the unique ID of the domain.

Domain Name
Displays the name of the domain.

Status
Allows you to create and delete rows in the table. Table 6-2 lists and describes the possible statuses.

Table 6-2. Domain Statuses

Status	Description
create	creates a new row
delete	Deletes an existing row. A domain cannot be deleted until there are no ports configured as part of that domain. You must delete all ports participating in this domain from the lsDomPortTable before deleting this row.
active	row exists

Ports
Displays the current number of ports configured as being part of the domain. The value zero indicates that the domain exists, but has no ports configured.

Age Time
Displays the time interval (in units of 10 minutes) used to age out all MAC addresses within this domain from the Port to MAC mapping table. The default value is 24 (240 minutes).

Configuration Changes
Displays the total number of configuration changes to this domain such as adding a port or removing a port, since warm/cold restart or the previous topology change.

Prev ID
Displays the ID of the domain before domain ID collision occurs. The domain ID collision occurs upon merging switch communities with same domain ID which was created by different domain management entities. The collided domain ID will be reassigned to guarantee the uniqueness of domain ID throughout the switch community.

Domain Configuration

Highlight a line in the Domain view and click this button to access the SynOptics 28xxx Domain Configuration View, which contains the following information.

Domain ID
Displays the unique ID of the domain.

Domain Name
Displays the name of the domain.

Domain Status
Allows you to create and delete rows in the table. Possible values are “create” (create a new row), “delete” (deletes an existing row), or “active” (row exists).

A domain cannot be deleted until there are no ports configured as part of that domain. You must delete all ports participating in this domain from the lsDomPortTable before deleting this row.

Number of Ports
Displays the current number of ports configured as being part of the domain. The value zero indicates that the domain exists, but has no ports configured in it.

MAC Age Time
Displays the time interval used to age out all MAC addresses within this domain from the Port to MAC mapping table. The default value is 300.

A value of zero means the table never aged out entries.

Total Changes
Displays the total number of configuration changes to this domain such as adding port or removing port, since warm/cold restart or the previous topology change.

System Up Time
Displays amount of time system has been running.

Previous Domain ID
Displays the ID number of the previously domain configuration.

Domain Port

Highlight a line in the Domain view and click this button to access the SynOptics 28xxx Domain Port View. This view contains the Domain Port Table which identifies all ports on the specified domain.

Only those Domain-Ports information within a switch can be retrieved when communicating to a non-master switch. An entire Domain-Ports information within a switch community can be retrieved through the master switch only.

The Domain Port Table contains the following information:

Domain ID
Displays the ID of the domain containing the port.

Switch ID
Displays the unique identifier for the switch containing the port.

Slot
Displays the slot number on the switch identifying the port.

Port
Displays the port number on the switch.

Create Domain

Opens the Domain Creation View, described below.

Domain Creation View

This view contains the following information:

Next Available ID
Displays the number for the next domain which is then entered in the Next ID field below it.

Enter Next ID
Displays the number of the Domain received from the Next Available ID field above it.

Domain Status
Allows you to create and delete rows in the table. Possible values are “create” (create a new row), “delete” (deletes an existing row), or “active” (row exists).

A domain cannot be deleted until there are no ports configured as part of that domain. You must delete all ports participating in this domain from the lsDomPortTable before deleting this row.

Domain Name
Displays the name of the domain.

MAC Age Time
Displays the time interval used to age out all MAC addresses within this domain from the Port to MAC mapping table.

The value of zero means to never age out entries. The default value is 300.

Port Domain

Opens the Port Domain View. This view is used to assign a port to a different domain. This view contains the Port Domain Table which provides the following information:

Port Domain Table

The Port Domain Table identifies the domain in which every port on each switch in a switch community is configured.

Only those Domain-Ports information within a switch can be retrieved when communicating to a non-master switch.

An entire Domain-Ports information within a switch community can be retrieved through the master switch only.

Switch ID
Displays the unique identifier for the switch containing the port.

Slot
Displays the slot number on the switch identifying the port.

Port
Displays the port number on the switch.

Domain ID
Displays the ID of the domain containing the port.

Standard Table Buttons

The Switch Community view contains the following standard table buttons. You can reorganize tables accessed through this view by using the buttons located either at the top or at the bottom of the table. These buttons will be displayed after you click a column heading.

Sort

Allows you to sort the table based on the column heading you select. To use the Sort feature, select a column heading and click the **Sort** button. The table is rearranged according to the chosen column.

Find

Allows you to search the table for a specific entry. To use the Find feature, select a column heading, click the **Find** button, and enter a search string in the dialog box. The Find feature does not accept partial strings. Not all column headings will present the **Find** button.

Update

Updates the table information.

Trunk Information View

Switch Type
Displays the switch type.

Time of Last Change
Displays the time of the last change.

Number of Changes
Displays the total number of changes made.

Number of Rows
Displays the total number of rows

Trunk Information Table

This table contains the following information.

LsId From
Indicates the switch which is the source of the 'root' trunk interconnection.

Slot From
Displays the slot number in the source switch containing the 'root' trunk interconnection.

Port From
Displays the port number in the source switch used for the 'root' trunk interconnection.

LsId To
Displays the switch which is the destination of the 'root' trunk interconnection.

Slot To
Displays the slot number in the destination switch containing the 'root' trunk interconnection.

Port To
Displays the port number in the destination switch used for the 'root' trunk interconnection.

State
Indicates the state of a trunk between two switches. The trunk state is determined by the internal topology algorithm, automatically. The values are "active" (the trunk is active and passes both user and management data) or "standby" (the trunk is inactive and does not pass user data: only management data is passed through this trunk).

Switch List View

Switch Type
Displays the type of SynOptics 28xxx switch.

Number of Switches in LAN
Displays the number of switches contained in your LAN.

Switch List Table

The Switch List Table contains the switch identification for all switches in a switch community.

Switch ID
Displays the unique switch identifier.

Vendor
Displays the vendor name of the switch manufacturer.

Switch IP
Displays the switch IP address.

Switch Type
Displays the switch type. The master switch is elected by the internal topology algorithm. There is one and only one master switch within a switch community. The values are “normalSwitch” (not a master switch) and “masterSwitch”.

History Logs

This selection contains a subview menu: Reset History, Error History, and Trace History, all of which are described below.

Reset History

This view contains the following information:

MaxEntries
Indicates the maximum number of reset history rows that can exist within a switch.

Entry
Displays each entry in the reset history table contains date, time and reason for each reset. Rows can not be created or deleted via SNMP.

Index
Displays the index number of a reset history entry.

Date
Displays the date when the reset occurred for this switch.

Time
Displays the time when the reset occurred for this switch.

Reason
Indicates the reason for the system resetting. Table 6-3 lists and describes the possible reasons.

Table 6-3. Reasons for System Reset

Reason	Description
power	power up reset
hwReset	reset through reset button
swReset	software reset
wdtReset	watch dog timeout reset
busErrReset	bus error reset
sysReset	other exception error reset

Error History

This view contains the Error Log Table, described below.

Error Log Table

The Error Log Table lists the error history log for a switch. This table provides the following information:

MaxEntries
Indicates the maximum number of error history log rows that can exist for a switch.

Entry
Displays a row in the error log table which enumerates the switch id, date, time and description for the error. Rows can not be created or deleted via SNMP.

Index
Displays the index number of a error log entry.

Date
Displays the date when the error occurred in this switch.

Time
Displays the time when the error occurred in this switch.

Reason
Indicates the type of error that occurred in the switch. The following are all the possible error types:

Table 6-4. Reasons for Errors Within Switches

Reason	Description
fanFail	fan failure
noMemory	insufficient memory
imageLoadFail	image downloading failed
macTableFull	Mac address table is full
noCpuBuffer	CPU driver has insufficient buffer space

Trace History

This view contains the Trace Log Table, described below.

Trace Log Table

This table contains the following information:

Current
Displays the current number of rows in the trace log table.

Last Event
Provides a description of the last event that generated a debug trap.

Table
Lists the event trace log for a switch.

Entry
Displays a row in the event trace log table which enumerates a subsystem id, an event code, an event count, date and time, an option, and a description of the event. Rows cannot be created or deleted via SNMP.

Index
Displays the index number of an event log entry.

Description of Event
Provides a description of the event.

Sy28xEnSwchApp

The following table and view are available through the Syn28xEnSwchApp's Icon Subviews menu.

Port Configurations Table

This subviews menu selection opens the SynOptics 28xxx Port Configurations View. See Chapter 3, *Configuration Views* for a description of this view.

Port to MAC View

This view contains the Port to MAC Table that identifies all the MAC addresses seen on each feeder and trunk port.

The following information is shown for each port:

The Port to MAC Table contains a mapping between a port and all of the MAC addresses seen on that port. This includes both feeder and trunk ports.

Slot
Displays the slot number of the switch containing the port.

Port
Displays the port number on the switch.

MAC Address
Displays the MAC address seen on the port.

Index

A

Add Trap Receiver View 6-6
Agent Configuration View 3-9, 6-5
Agent Information 6-5
Alarm
    Messages 4-1, 5-1
Align Errors 2-8
Application View 6-1
Application View Modes 6-2
Audience xi

B

Boot Image 1 3-10
Boot Image 2 3-10
Buffer Overflows 2-9

C

Chassis Configuration View 3-7
Chassis Contact 3-7
Chassis Description 3-7
Chassis Location 3-7
Chassis Manager Application View 6-4
Chassis Serial Number 3-7
Chassis Switch ID 3-7
Chassis Type 3-7
Chassis Version 3-7
Common Applications 6-1
Configuration View 3-1
Congestion 2-9
Connecting Device 3-4
Connector 3-2
Conventions xii
Crc Errors 2-8

D

Device
    View 2-1
        Configuration 2-1
Device Application View
    Icon mode 6-2
    List mode 6-2
Device Icon Panel 5-3
Device Topology View 5-1
Domain 6-7
Domain Creation View 6-10
Domain ID 3-3
Domain Id 3-1, 6-7
Domain Table 6-7
Dynamic
    Representation 2-1

E

Edit 5-3
Enable/Disable Port 2-9
Error History 6-14
Event
    Messages 4-1, 5-1

F

Find
    Button 6-11
Firmware 6-2
Flow Control 3-5
Frames 2-8

G

Good Frames 2-8

H

Hardware
    Requirements xi
History Logs 6-13

I

Internal Received 2-8
Internal Transmit 2-8

I (continued)

Internal-to-Network Statistics 2-8
IP Application 6-1
IP2_App 6-1

L

Last Configuration Changes 3-7
Link Status 3-2
Link Type 3-2
Local Storage Version 3-9
Logical Device View 2-1
Logical Representation 2-1
LsId From 6-12
LsId To 6-12

M

Media Type 3-2
MIB-II 6-1
Model
    Detail Views 6-2
    Information
        View 6-2
    Performance Views 6-2
    Type
        Name 1-1
Module
    Identifier 2-4
    Number 2-4
Module Status 2-4

N

Network
    Management xi
Network Received 2-8
Network Transmit 2-9
Network-to-Internal Statistics 2-8
New Model... 5-4
Next Boot Gateway 3-9
Next Boot Image Load Source 3-9
Next Boot Type 3-5
Notice i

O

Off-Page Reference Panel 5-3
Operational Type 3-4
Overruns 2-8

P

Partition Status 3-2, 3-5
Physical Device View 2-10
Poll
    Time 6-2
Port
    Identifier 2-4
    Status 2-4
Port Configurations Table 3-1
Port Connections Panel 5-4
Port Reset 3-6
Port Speed 2-4
Port Statistics 2-8
Port to MAC View 6-16
Port Type 2-4
Port Type Configuration 3-5

R

RAM Version 3-9
Receiver 6-5
Receiver Status 6-5
Reconfigure 6-2
Related Reading xii
Remote Fault 3-4
Reset History 6-13
Restricted Rights Notice ii

S

Simplified Device View Panel 5-3
Slot 3-1
SNMP2_Agent 6-1
Sort Button 6-11
SPECTRUM Support 1-2
SPMA
    And the Token Ring MicroLAN Switch Module 1-2
Static 2-1
Status Display 3-8
Switch Community 6-7
Switch Community View 2-6
Switch IP 6-13
Switch List View 6-12
Sy28xEnSwchApp 6-16

S (continued)

Syn28CommonApp 6-5
System2_App 6-1

T

Table Buttons 6-11
Terminology xii
Topology Mode 3-8
Total Configuration Changes 3-7
Trace History 6-15
Trademarks i
Trap Receiver Table 6-5
Trap Receiver View 6-5
Trunk Information View 6-11

U

UDP
    Application 6-1
UDP2_App 6-1

V

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